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0.1 Internal wave transformation and effects in a near-bottom thermocline

A. **Navrotsky V.V.** (1), B. Liapidevsky V.Yu. (2), C. Pavlova E.P. (1)

(1) V.I. Ilichev Pacific Oceanological Institute FEB RAS, Russia, (2) Institute of hydrodynamics SB RAS, Russia (navrotskyv@poi.dvo.ru / Phone: +7 4232 31 25 68)

At the marine experimental station “Cape Shoulz” of the Pacific Oceanological Institute FEB RAS measurements of temperature fluctuations in the near-bottom layer 10 m thick. were made with the help of two stationary arrangements. At each arrangement were hanged three garlands with 20 probes at each garland. Information was transmitted to the shore-based computer wirelessly from one garland and by cable from the other.

Simultaneous measurements of vertical structure of temperature, salinity and current velocity were made along transects in the shelf zone and near the garlands with temperature probes. A separate device was used to measure fluctuations of pressure, temperature and salinity close to the garlands. Detailed analysis of the data is made to use the results for modeling and understanding the interaction of processes in the near-bottom stratified layer of sea, in atmosphere and in the Earth crust

Formation of eddies and periodic bottom currents as well as vertical mixing and dissipation of tidal energy in stratified shallow waters close to shore are analyzed. From the point of energy transfer from oceanic dynamic disturbances (internal waves, bores, turbulent eddies) into seismic fluctuations of the Earth crust the most interesting are measurements of pressure fluctuations close to bottom. Periodical vertical movements and corresponding fluctuations of pressure in near-bottom thermocline are related to internal waves, so we calculated cross spectrum of temperature and pressure fluctua-

tions close to bottom.Existence of the cross spectra maxima at periods from tidal till several minutes indicates the possibility of microseisms generation just in the zone of internal waves approaching bottom, where their breaking is observed. Ongoing experiments and modeling will let us to estimate, which parts of tide and internal wave energy are going into near-bottom currents, into mixing and work against buoyancy, into bottom microdeformations, generating seismic waves in the Earth crust upper layer and so affecting the seismic background of a region.